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Assessment of the effects of the BARF diet on the health of dogs

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ABSTRACT. The study aimed to evaluate the BARF (Biologically Appropriate Raw Food) diet based on the mixtures used and to check the impact of the diet on dogs' health by analyzing changes in blood parameters before and after the introduction of a raw diet. The primary research method for this work was an online survey made via the website www.docs.google.com/forms. One hundred questionnaires were obtained in the study. In addition, caregivers of dogs fed the BARF diet were asked to provide laboratory tests, of which 15 results of morphology, biochemistry and expanded ionogram of dogs were obtained before and after introducing the raw diet. The survey results were prepared in Excel and STATISTICA 13.3 (TIBCO Software). In contrast, the blood test results were compared using the Student's T-test for paired samples. Observations and conducted research showed that after introducing the BARF diet to their animals, the respondents noticed many positive effects of their diet. Some of the dogs tested improved their laboratory performance parameters.

Keywords: raw diet; nutrition; blood tests; canine; survey.

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Introduction

The topic of animal nutrition is becoming increasingly popular, and animal keepers are making every effort to feed their four-legged friends adequately. Currently, many amenities exist due to the constantly evolving pet market, where many types of food intended for dogs can be found (Simonsen et al., 2014). Among commercial feeds, dry, wet and semi-moist meals are offered. However, questions remain as to what is the most appropriate food for a domestic dog belonging to the predator group.

In Europe, recommendations for animal nutrition are included in the guidelines of the European Pet Food Producers Association (FEDIAF). They have the requirements for essential nutrients in complete and complementary foods for companion animals (Kazimierska et al., 2020). The deficiency and the excess of certain ingredients can adversely affect the body on various levels. This applies to behavioural changes and all kinds of health conditions.

Eating raw meat finds both supporters and opponents. This diet is based on natural ingredients such as muscle tissue, bones, and organ meats (liver, stomachs, hearts, spleen, etc.). A small part of the diet is the addition of carbohydrates such as fruits and vegetables (Wu et al., 2019; Ahmed et al., 2021). This type of feeding may carry a risk of bacterial infections and parasitic diseases, malnutrition, deficiencies or disorders of the calcium and phosphate metabolism (Kölle & Schmidt, 2015; Guidi, 2021, Davies et al., 2019). Nevertheless, with the proper balance of the raw diet and a proven source of meat, this method of feeding may prevent food intolerances, improve the condition of the hair coat and teeth, and have a positive effect on the animal's behaviour (Neshovska, 2020; Freeman et al., 2013).

In order to determine the demand for individual nutrients, the following should be taken into account: age, body weight, race, temperament, physiological state and the degree of physical activity of the animal (Barteczko et al., 2020). Moreover, providing the right amount of water is essential due to the metabolic processes taking place in the body (Cholewiak-Góralczyk, 2021). The dog's body is adapted to a diet rich in protein and fats, while carbohydrates are tolerated only in small amounts (Bermingham et al., 2017). Protein is an essential component of tissues and cells - the basis for the organism's development. Protein deficiency may cause growth inhibition, deformities and abnormalities in the development of the muscular system (Mirowski, 2014). Minerals are also necessary to maintain proper development. The most critical

macronutrients are calcium, phosphorus, magnesium, sodium and potassium. In dog nutrition, the most important water-soluble vitamins are those from group B and vitamin C and those soluble in fats (A, D, E and K) (Cholewiak-Góralczyk, 2021). The situation is different in the case of fat-soluble vitamins because they can be stored in the body (Case, 2014).

The aim of the study was to assess the impact of the BARF diet on the health and general condition of companion dogs.

Material and methods

The research method of this work was an online survey made via the website www.docs.google.com/forms. The survey was published on the thematic groups of the social networking site; it was completely anonymous and voluntary. One hundred questionnaires were obtained in the study. Additionally, keepers of dogs fed the BARF diet were asked to provide tests (morphology, biochemistry and extended ionogram) before and after the introduction of the raw diet. The results were developed in Excel and Statistica 13.3 (TIBCO Software).

The form consisted of 42 questions, of which 26 were single-choice questions, 13 multiple-choice questions and three open-ended questions. The survey was divided into three parts. The first and second parts concerned information about the guardian and his pet. The last part focuses on specific questions about the BARF diet and how to prepare it. In addition, the questions were to verify the level of knowledge of the keepers about the diet and their opinion on the impact of the BARF diet on dogs.

The most numerous group were dog keepers aged 18-28 (42%). On the other hand, 26% of dog handlers were 36-50 years old, and 24% were 29-35. The numerous minor groups were people under 18 (4%) and those over 50 (4%). The most significant number of caregivers lived in cities with more than 500,000 inhabitants (23%) and rural areas (22%), 13% lived in towns with a population of 250,000-500,000, and only 10% lived in cities with a population of 50-100,000 (Figure 1).

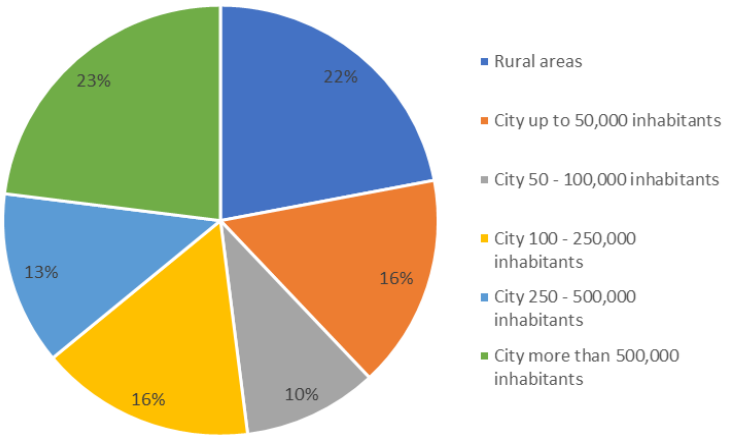

Figure 1. Place of residence of the respondents.

Among the respondents, the most significant number of caregivers obtained knowledge from social groups, the Internet, books and scientific articles. Only 22 nineteen respondents indicated veterinarians as the source of their information. As many as 81% of respondents had a negative opinion about the BARF diet, mostly from friends and veterinarians.

Among the subjects, the most numerous were dogs aged 1 to 2 years (35%) and in the age group 3-7 years (31%). 17% of respondents declared that their dogs were under one and over 7 (Figure 2). The most numerous respondent dogs were purebred dogs with a birth certificate or pedigree (65%). 18% of the owners described their dogs as a mixed breed; the remaining dogs were defined as breed-type individuals (17%). Among purebred dogs, the most numerous representatives were dogs from group I FCI, which was dominated by German Shepherds (6 individuals). Then golden retrievers (4 individuals), French bulldogs (4 individuals), and three border collies and pugs each. Of the 100 dogs tested, 47% were castrated, while a slightly more significant proportion of the dogs tested were not castrated (53%).

The dogs' weight varied; most respondents looked after medium-sized dogs weighing between 11 and 25 kg. The smallest group of dogs were those weighing over 40 kg. The assessment of the condition of dogs using the

BCS method showed that the vast majority of animals (68 animals) had an ideal weight. Underweight (23 individuals) was noticed more often than overweight (7 individuals), and emaciation and obesity occurred only in individual cases.

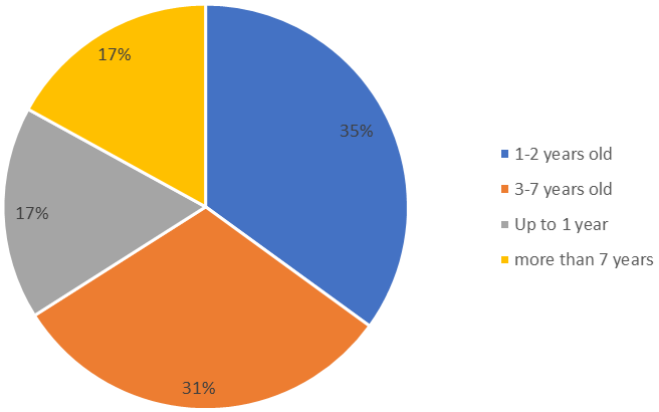

Figure 2. Age distribution of dogs.

Half of the respondents (50%) introduced the diet immediately, without gradually getting the dog used to the new type of food. However, 39% of the owners decided to raise the dog progressively to the new diet. Only 11% of dogs were fed a raw diet from the beginning of their stay with the caregiver or the puppy age (in the kennel).

Among the respondents, the most frequently mentioned ailments in dogs before the introduction of the BARF diet were food allergies (44%), adverse reactions to food (35%), diseases of the gastrointestinal tract (17%) and gastroenteritis, and organ diseases (10% each).). These factors greatly influenced the transition from traditional to raw diets. Before introducing the BARF diet, 42 animals were fed dry food, seven individuals were fed wet food, and 34 individuals were fed both dry and wet food. Only six caregivers decided to provide their dogs with a home-cooked diet (chicken, rice, vegetables). In 15 animals fed with dry food before the introduction of the BARF diet, no symptoms suggesting health problems were shown.

The form of the BARF diet was primarily raw (51%), without thermal or mechanical treatment, and 12% of the respondents gave dogs a cooked version of this diet. The percentages of individual components in the diet adopted by the carers ranged from 50 to 100% of the content of meat in the diet, bones up to 15%, offal up to 20% (including the liver up to 5%), vegetables up to 20%, and fruit up to 5%. 30% of the caretakers accepted the division of 65% of the meat, 20% of offal and 15% of the bones. Another 23% of carers accepted components constituting 60% of meat, 10% offal, 10% bones, 15% vegetables and 5% fruit. Another percentage was distinguished by the group of 21% of respondents: 50% meat, 20% offal, 15% bones, 10% vegetables and 5% fruit.

Among the components used, the following meats were distinguished: beef (77%), turkey (72%), duck (66%), rabbit (62%), chicken (56%), pork (52%), lamb (39%) , veal (36%), deer (36%), mutton (33%), goose (33%), quail (29%), horse (27%), roe deer (27%), goat (19%), wild boar (11%), kangaroo (10%), ostrich (8%) and hare (6%). The fish meat was served by 67% of the respondents; most of them were served only as a small addition to the mix (50%). The most common fish were salmon (60%) and cod (34%). Bones, as an important element in the BARF diet, were used by 65% of dog handlers, most of them serving meat bones, i.e. raw bones with elements of meat. Only 8% decided to administer the bone in a fragmented form. While the bones were not fed to the dogs, the handlers replaced them with egg shells, calcium citrate, calcium carbonate, or bone meal. Offal was served by 95% of the respondents; the most common ones were hearts (94%), livers (89%) and stomachs (79%). Lungs (45%), kidneys (44%), tongues (30%), spleen (12%), testes (11%) and brains (8%) were also replaced. It was noted that 89% of respondents do not use pork and wild boar offal. (Table 1).

The caregivers agreed in 97% that they supplement the dogs' diet. The most frequently mentioned supplements were fish oils, brewer's yeast (86%) and sea algae (82%). Other supplements mentioned by caregivers used in the BARF diet were egg yolks (63%), rosehips (33%), ground egg shells (31%), New Zealand mussels in the form of flour (30%), MSM - Methylsulfonylmethane (25%), vitamin E and haemoglobin (19%), Spirulina (16%), milk thistle (15%) and taurine (14%) and Himalayan / rock salt (12%).70% of respondents gave their dogs vegetables and fruit. 12% of the caregivers decided to give the dog only vegetables, and only 1% - only fruit.

Table 1. Contribution of the individual components of the BARF diet for dogs.

The share of individual components in the diet	Number
Meat 65%, offal 20%, bones 15%	30
Meat 60%, offal 10%, bones 10%, vegetables 15%, fruit 5%	23
Meat 50%, offal 20%, bones 15%, vegetables 10%, fruit 5%	21
Other	26

The most frequently mentioned vegetables were: carrot (90.4%), pumpkin (56.6%), beetroot (53%), parsley (51.8%), cucumber (49.4%), sweet potato (45.8%). , zucchini (36.1%) and broccoli (44.6%), the owners also gave their dogs pickled vegetables, such as cabbage and cucumbers (27.7%). In most cases, the vegetables were given raw (41%), and other respondents opted for heat treatment by boiling in water (22%) or steaming (19%). The most frequently administered fruits in the diet were apples (88.9%), bananas (77.8%) and blueberries (66.7%).

The effects of introducing the BARF diet in the opinion of the carers (Table 2).

Table 2. Positive effects of introducing the BARF diet in dogs.

Effect	Percent %
Improving the condition of the hair and skin	74
Improving the appearance of the stool	65
Eliminating flatulence / better digestion	46
Maintaining or achieving a healthy body weight	43
Stop diarrhea	39
The animal is calmer after a meal	32
Improvement of efficiency / condition	27
Eliminating the discharge from the eyes	26
Reduction or elimination of coprophagia (eating faeces)	25
Improving blood parameters	24
Less greed / the animal eats less greedily	22
Improvement of the condition of teeth and gums	20
Stabilize the disease state from which the animal is suffering	17
Limiting or eliminating the consumption of inedible items	17
Eliminating runny nose	3
Not noticed	10

The results of the study of dogs' morphology, biochemistry and expanded ionogram before and after the introduction of a raw diet was obtained. All the results of the obtained tests were compared. Blood counts included: leukocytes (WBC), erythrocytes (RBC), haemoglobin (HGB), hematocrit (HCT), MCV (average red blood cell volume), MCH (average red blood haemoglobin weight), MCHC (average blood haemoglobin concentration) red), RDW (red blood cell breakdown factor), platelets (PLT), MPV (mean platelet volume), lymphocytes (LYM), eosinophils (EOS), and segmented neutrophils (GRAN). Blood biochemical parameters: AST (aspartate aminotransferase), ALT (alanine aminotransferase), ALP (alkaline/alkaline phosphatase), glucose, creatinine, urea, total protein and albumin (Table 8). The ionogram included: sodium (Na), potassium (K), chlorides (Cl-), calcium (Ca), phosphorus (P), magnesium (Mg) and iron (Fe). The parameters' standards were adopted in terms of the results obtained from the dog owners.

In a morphological study of dogs before introducing the BARF diet, only two animals (13.3%) were within the established standards. On the other hand, 13 individuals (86.7%) had some deviations from the norm in individual parameters. Most parameters above the norm were found in the values of HGB (haemoglobin), HCT (hematocrit) and leukocytes (WBC) and were marked in red (Table 3).

After the introduction of the BARF diet, four individuals (26.7%) had all morphological parameters within the normal range, one of which also had average results before the introduction. In contrast, nine individuals (60%) had some deviations. Most of these deviations were above the upper limit regarding the established norms of normal morphological parameters. Parameters deviating from the norm are marked in red (Table 4).

In the biochemical study, the most significant number of deviations from the established norm before the introduction of the diet was noted in the values of ALT (alanine aminotransferase) - in 6 cases (40%). Three parameters (ALP, total protein and albumin) were normal in all animals. It should be noted that nine

subjects (60%) had results outside the established norms even before the introduction of the BARF diet. After introducing the new diet, AST parameters increased in 4 subjects (26.7%), while in 1 subject (6.7%), which had a higher result before introducing the diet, it was normalized after its introduction. In subjects 6 and 13, creatinine parameters improved after the introduction of the diet. Before and after the diet, the ALP and total protein parameters were within normal limits in all subjects. Subjects 2 and 4 had average results before and after the introduction of the diet. The parameters deteriorated in 7 subjects (46.7%), and in the case of 8 subjects (53.3%), their parameters in the biochemical test were normalized, or there were slight changes. Abnormal parameters before and after the BARF diet are marked in red (Table 5, Table 6).

Table 3. Results of morphological studies before the introduction of the BARF diet in dogs.

	WBC	RBC	HGB	HCT	RDW	PLT
1	10,00	6,75	10,30	0,48	16,00	486,0
2	6,29	8,15	14,50	0,55	15,60	267,0
3	10,60	7,59	11,10	0,53	18,00	489,0
4	11,23	7,44	11,80	0,53	14,90	292,0
5	5,24	6,64	9,20	0,47	17,50	227,0
6	11,80	8,38	11,10	0,63	15,60	289,0
7	4,95	8,78	12,00	0,61	16,50	231,0
8	9,40	7,25	11,30	0,52	15,00	400,0
9	7,22	6,26	8,50	0,46	14,90	265,0
10	9,00	6,70	9,60	0,45	14,00	221,0
11	10,60	8,90	12,00	0,59	15,00	223,0
12	7,20	7,56	10,50	0,48	17,00	220,0
13	11,73	9,50	12,40	0,62	15,00	321,0
14	13,80	7,20	10,73	0,50	17,50	149,0
15	14,10	6,65	10,74	0,49	17,60	303,0

Table 4. Results of morphological studies after the introduction of the BARF diet in dogs.

	WBC	RBC	HGB	HTC	RDW	PLT
1	9,10	7,32	11,10	0,510	174,0	268,00
2	7,04	8,55	21,50	0,590	18,22	397,00
3	7,90	6,70	10,40	0,480	17,00	290,00
4	12,33	6,97	12,00	0,496	15,40	276,00
5	6,46	6,68	10,90	0,380	17,80	304,70
6	11,45	8,45	12,17	0,648	15,80	294,00
7	12,90	7,90	10,87	0,541	16,50	600,20
8	9,50	7,29	11,15	0,540	15,00	405,00
9	9,40	7,20	10,10	0,490	14,10	297,00
10	9,40	7,90	11,00	0,535	14,20	222,00
11	10,80	8,50	10,70	0,520	15,00	290,00
12	8,90	6,94	10,10	0,460	18,00	200,00
13	11,00	8,40	11,00	0,560	16,00	350,00
14	13,20	7,50	10,65	0,478	18,00	202,00
15	6,91	7,97	10,15	0,505	17,95	212,00

Before introducing the diet, sodium (Na) was within the established norm in all individuals. Five subjects from the research group had all the parameters of the ionogram within the correct values. The most abnormal cases were noted in the content of calcium (Ca). These results indicate a deficiency of this component in the blood, where its normal range is from 8.40 to 11.50 mg dL^{-1}. Deficiency also occurred in one individual in the case of potassium (K), the norm of which ranges from 4.10 to 5.40 mmol L^{-1}. In the case of magnesium (Mg), two individuals (13.3%) had an excess of this nutrient, similarly, in the case of iron, where three individuals (20%) had inconsistent reference values, 2 of them had an increased concentration, and one individual had its deficiency. As in the case of the results of the ionogram parameters before the introduction of the diet, the parameters of sodium (Na) after its introduction were also within the established norm in all 15 subjects. The situation of the subjects in the parameters of calcium (Ca) content from the study before the introduction of the BARF diet improved. On the other hand, two other individuals

(3 and 6) had an excess of it. The results of 3 subjects (2, 3 and 12) in the case of potassium (K), which were found to be excess, deteriorated. Subject 13, both before and after the introduction of the diet, had a phosphorus deficiency (P). Abnormal parameters both before and after the application of the BARF diet were marked in red (Table 7, Table 8).

Table 5. Results of biochemical studies prior to the introduction of the BARF diet in dogs.

	AST	ALT	ALP	Glucose	Creatinine	Urea
1	42,00	78,00	92,00	85,00	1,00	29,00
2	30,10	51,40	44,00	72,50	0,85	47,75
3	38,00	226,00	82,00	72,00	0,80	29,00
4	29,60	46,90	16,90	107,60	1,00	28,80
5	25,00	55,00	15,00	84,90	1,00	35,20
6	45,00	75,00	46,70	90,00	0,69	49,00
7	31,60	79,80	17,10	119,50	0,98	43,60
8	44,00	80,00	35,00	70,00	1,20	74,00
9	22,00	97,00	32,00	94,00	0,80	22,00
10	31,00	58,00	49,50	90,00	0,98	35,00
11	42,00	59,00	56,00	69,00	1,00	39,00
12	26,00	34,00	17,00	73,00	1,10	47,00
13	47,00	33,30	66,00	208,40	0,76	38,40
14	26,00	26,80	18,00	66,20	0,85	43,00
15	34,60	56,30	27,00	87,00	1,15	38,00

Tab**le 6.** Results of biochemical studies after the introduction of the BARF diet in dogs.

	AST	ALT	ALP	Glucose	Creatinine	Urea
1	70,00	145,00	43,00	197,00	1,20	41,00
2	35,10	57,60	62,00	75,68	1,42	69,70
3	64,00	50,00	24,00	23,00	1,10	33,00
4	23,90	32,90	12,00	71,60	0,90	44,00
5	44,80	69,00	14,70	85,20	1,00	46,80
6	50,00	129,00	46,00	92,00	0,89	56,10
7	33,40	59,50	22,50	117,80	1,10	45,00
8	43,50	65,00	38,20	95,00	1,25	49,50
9	33,00	72,00	44,00	94,00	1,10	38,00
10	32,20	61,50	53,00	110,00	1,65	45,00
11	46,00	61,00	58,00	85,00	1,20	41,00
12	43,00	44,00	7,00	70,00	1,30	53,00
13	44,50	40,50	60,00	150,00	0,88	42,50
14	34,00	30,00	25,00	73,00	1,25	39,00
15	27,30	50,30	27,90	73,10	0,90	65,10

Table 7. Results of studies on ionogram parameters before introducing the BARF diet in dogs.

	Na	K	Cl	Ca	P	Mg	Fe
1	148,50	4,60	119,80	10,80	3,90	2,00	24,10
2	150,10	4,78	111,80	9,34	4,03	1,99	20,50
3	150,80	4,70	116,70	10,90	3,50	2,20	41,90
4	144,30	4,50	121,60	10,30	2,90	2,00	19,80
5	139,85	4,12	114,00	10,24	2,55	1,80	16,89
6	144,00	4,15	99,50	10,60	2,15	2,30	18,50
7	144,30	5,00	111,90	8,20	3,94	1,76	17,00
8	155,40	5,10	119,00	11,40	4,10	1,90	20,00
9	152,00	4,10	118,00	11,00	5,30	3,15	16,80
10	139,25	4,45	99,90	8,35	3,30	1,90	16,50
11	148,80	5,00	115,00	8,20	3,10	3,20	21,70
12	147,50	5,10	116,00	9,40	4,50	2,20	18,00
13	147,50	4,35	109,80	8,60	1,86	2,00	19,80
14	146,40	4,30	112,70	9,10	6,15	1,80	18,20
15	145,30	5,43	110,90	8,29	6,00	2,40	17,50

Table 8. Results of studies on ionogram parameters after the introduction of the BARF diet in dogs.

	Na	K	Cl	Ca	P	Mg	Fe
1	151,50	5,30	117,00	10,70	3,70	2,50	28,90
2	151,10	5,46	110,20	9,35	4,03	2,03	21,00
3	155,50	6,40	117,10	11,70	4,40	2,80	26,60
4	147,80	4,80	120,20	10,30	3,50	2,10	20,20
5	140,00	4,67	120,60	10,52	2,63	1,82	16,90
6	148,00	4,22	102,30	11,55	2,25	2,40	18,80
7	140,20	5,20	110,00	8,50	4,80	1,90	17,00
8	145,00	5,35	119,20	10,80	4,05	1,90	19,80
9	152,00	4,00	118,00	9,50	4,30	2,60	29,00
10	139,50	5,00	102,30	9,50	4,00	2,15	16,90
11	145,00	5,25	118,20	8,50	3,90	3,00	19,50
12	148,00	5,80	108,90	11,20	3,40	2,20	19,00
13	149,00	4,30	111,00	9,00	2,40	2,20	19,70
14	150,20	5,13	105,70	10,45	6,20	1,75	18,70
15	143,90	4,55	108,10	11,37	3,68	2,13	17,20

Taking into account the results from the thyroid panel in dogs, it can be observed that all dogs were within the normal reference range before the introduction of the BARF diet. However, after introducing the diet to one dog, they exceeded the upper limit of the norm, and in 7, they increased. In the remaining dogs, they remained at an almost identical level both before and after the change of diet. This may suggest the occurrence of food thyrotoxicosis in dogs fed the BARF diet (Table 9).

Table 9. Distribution of thyroid hormone levels before and after the introduction of the BARF diet.

Thyroid panel	T4 total		T4 free	
	before	after	before	after
1	1,85	4,45	2,50	3,10
2	1,6	5,87	1,01	3,76
3	1,55	1,80	0,75	1,00
4	2,00	3,00	2,00	2,58
5	3,69	3,68	1,96	1,90
6	4,00	3,90	0,82	0,98
7	1,22	1,55	0,62	0,80
8	2,85	2,83	1,90	1,85
9	1,50	3,11	1,35	1,90
10	3,50	3,00	0,85	0,90
11	4,10	3,15	1,75	0,65
12	2,50	2,50	1,90	2,00
13	1,80	2,00	2,00	0,95
14	1,55	3,00	0,68	1,85
15	2,56	2,60	2,10	2,00

Discussion

Based on the results of blood tests obtained from dog keepers, the small size of the research group in this study could have made it difficult to verify statistically significant data. Therefore it is necessary to extend this type of research to a larger group of individuals. However, considering the information obtained from dog handlers, diets based on meat, offal, bones and small amounts of carbohydrates in the form of vegetables and fruits mostly brought about positive results in the respondent's dogs.

By drawing attention to the available scientific sources on this topic, there is little research done monitoring the long-term effects of the BARF diet on dog health. In a research paper by Brozić et al. (2019), attention was drawn to the improved digestibility of the components on which this diet is based. Positive effects were also mentioned, such as improving the condition of the coat and skin, improving the appearance of teeth and gums, and improving the overall health of the animal, which is also confirmed by the results obtained in the surveys. Neshovska (2020), as well as Freeman et al. (2013), also noted a positive effect of a raw diet on the coat as well as the overall condition of the animal. In addition, in the case of food

allergies in dogs, the BARF diet may result in positive effects due to the possibility of relying on non-allergenic sources of protein, which is reflected in this study and in the research of Berschneider (2002).

The studies of Hajek et al. (2022) indicate too high calcium concentrations in the tested dogs after introducing a raw diet. Additionally, they note the increased blood urea concentration value, which is confirmed in this study.

When considering the relationship between raw meat nutrition and thyroid hormone levels in the study, it was noticed that there is a tendency to increase T4 levels, which may suggest the occurrence of nutritional thyrotoxicosis as a result of an improper diet in terms of iodine content in algae or offal containing elements of dewlap. Similar conclusions were reached by Köhler et al. (2012), Sontas et al. (2014) and Zeugswetter et al. (2013), which show how important is the aspect of proper diet balancing and performing control blood tests in order to quickly eliminate deviations. From reference values.

Conclusion

Observations and conducted research showed that after introducing the BARF diet to their animals, the respondents noticed many positive effects of their diet. These include improving the condition of the skin and coat, improving the appearance of stools, reducing bloating / better digestion, maintaining or achieving a healthy body weight, stopping diarrhoea, reducing or eliminating coprophagia. Some of the dogs tested improved their laboratory performance parameters. Deviations that occurred in other animals, i.e. an increase in liver, urea or thyroid hormones, may suggest a poorly balanced diet. More research is needed to discuss the barf diet's long-term health effects. The diet should be based on expertise, dietary consultation and quarterly blood tests over at least 12 months to assess the animal's health in order to assess the impact of the diet introduced.

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